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ABSTRACT

A survey of selected educational institutions within the Pacific Rim was taken to determine the degree of interest and level of expertise available for an international experiment in computer networking. From the data collected from the Pacific Rim institutions, it appears that the conditions which promulgate computer network development are present, i.e., educational costs are constantly a problem; the distribution of resources is heavily weighted in favor of the more industrialized countries; the mass of resources and users does exist even though it is not organized at the present time; and the development of a large-scale regional computer-communications network can indeed alleviate some of the shortcomings of the present situation. (WH)

SURVEY OF EDUCATIONAL COMPUTING IN THE PACIFIC RIM

BY

KAREN L. AH MAI

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JUNE 1974

TECHNICAL REPORT CN74-34

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INTRODUCTION

The concept of the Pacific Educational Computer Network originated from trends occurring in two related areas:

(1) The educational community, constantly beset by insufficient funds, could develop the means to transfer and share educational resources between institutions by using computer-oriented communication as the medium;

(2) The availability of satellite transmission facilities offered the opportunity to develop effective organization of these communication channels specifically for data. Techniques for data transmission have not yet been developed to a level of high efficiency and effectiveness by the communications industry.

Therefore, the elements of a pilot study which could benefit both these areas existed. It was obvious that if the educational community were used as a test base for the development of both resource-sharing and communication techniques, it could possibly be the recipient of a more permanent and viable system of resource-sharing and distribution in the future.

In the United States, the ARPANET was an example of the development of a resource-sharing network which achieved success on the basis of terrestrial communications technology. The U.S. National Science Foundation also sponsored a substantial research in the area of developing educational resource-sharing networks.

The conceptual Pacific network proposes to extend the experiences gained in intranational networking into an international environment. The injection of international influences, however, substantially changes the complexion of network development and implementation.

In the United States the user/participant group is fairly advanced in the technology of using computers. In the Pacific Rim, the characteristics of the possible user/participant population were unknown, making any definitive planning and proposal development difficult. Therefore, a study determining (1) the level of technical competence of a cross section of possible users and (2) their level of interest in a Pacific network was undertaken. The results of this survey, along with the information received from responding institutions, are included in this report.

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1. ASSUMPTIONS FOR INTERNATIONAL NETWORK DEVELOPMENT

In the preliminary stages of project development, very little information was available on the context for developing international computer-communications systems. Experiences in the U.S. and Europe do not provide particularly relevant data on dealing with the problems of widely varying levels of technical expertise, diverse cultures, and different legal systems for communications that are present in the Pacific Rim community. Certain assumptions which have been implicit throughout the development of the Pacific network concept are therefore being explicitly stated to set the guidelines for interest, contributions, and further participation in future experimentation and development. As additional discussions take place, these assumptions may be altered and certainly will be added to. Initially, however, they are:

1. That the basic means of telecommunications will be satellite transmission.

   This assumption is made because of the widely dispersed geographic area which is included in the Pacific Rim and because with satellites, transmission cost is relatively insensitive to distance.

2. That the basic language in the development effort will be English.

   This assumption is made because in most technical applications English is almost a universal language. In addition, almost all the programming languages used in the Pacific Rim are English-based.

3. That the project will concentrate on developing an experimental network for academic and research use.

   The primary focus of the network is to distribute relevant educational resources to other users in the Pacific. This type of service is not now offered by the common carriers but to avoid aspects of competition later, the development of a plan to phase out of experimental networking will be included within the general plan.

4. That before the network can be implemented in countries within the Pacific Rim, an assessment of the individual country's ability to absorb and use the technology should be carried out to determine the positive and negative effects of the network.

5. That the political environment will be international in nature.

   The network participants will come from all countries capable of technically supporting ground stations for data transmission.

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6. That the user population will have a wide range of computer-communications ability and a variety of telecommunications capability.

   There is a diverse array of computing equipment in the Pacific, as well as supporting telecommunications systems of varying reliability. All of these have to be taken into account in the Pacific Network development.

7. That a complex funding situation for both development and operations is likely.

   The exchange rates for various currencies fluctuate and where an exchange of funds is necessary between institutions, the financial arrangements will be complex. If operational status is planned, an accounting system for the purpose of equitable payment for resources used will have to be designed well in advance of implementation.

8. That international network interconnection will produce problems in network connectivity that are administratively difficult to solve, and that these administrative problems may preclude or delay the implementation of certain technologically desirable alternatives.

This list by no means covers the entire scope of assumptions taken into consideration in the Pacific Network development but they set the stage for further discussion and the development of alternatives.

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2. SURVEY BACKGROUND AND METHODOLOGY

A survey of selected educational institutions within the Pacific Rim was taken to determine the degree of interest and the level of expertise available for an international experiment in networking.

Briefly, educational networking is receiving considerable attention in the academic environment for several reasons: (1) educational costs are rising; (2) the distribution of educational resources is such that there are concentrations of high quality talent and facilities at the same time that there is need without sufficient resources; (3) computing as a resource can be extremely cost-effective by applying economies of scale; and (4) computer-communications networks offer a viable solution for providing the necessary mass to effect economies of scale and for distributing the available resources in an effective manner.

Educational computing in the Pacific includes a diversity of capability, ranging from initial attempts to sophisticated multiprocessor operations. A study of educationally-oriented computing capability in the Pacific Rim nations was expected to indicate the level of interest and capability existing for further study on a computer-communications development. The ultimate objective was the sharing of educational resources among institutions in the Pacific region.

Experiments in Canada, Japan, and the United States indicate that the potential of computer-communications networks is well worth the investment of planning and implementation. Canada is developing CANUNET, Japan is linking its regional university computers, and the United States has been experimenting with the ARPANET. In all cases, the primary motivation has been to reduce overall expenditures by the sharing of resources through communications channels.

Similarly, international regional networking is also a concept which merits further examination. The international context illuminates the more general benefits of computers and networking. For example, increasing man's ability to deal with this environment is cited by the United Nations reports as a prime reason for encouraging the inclusion of computers into the development plans of emerging nations. Use in statistics generation, economic modeling, and planning greatly enhances the value of these processes in national planning and development.

Reducing the scope to aspects of international educational resource-sharing, specific applications which could be available through networking would be general computational capability, computer-aided instruction, regional library sharing, and specialized discipline developments, e.g., chemistry program exchanges or data banks for physics.

In the nations mentioned previously, the level of expertise needed to sustain network development is assumed to be rather high. This, however, is not true for the Pacific Rim nations universally. The nations differ substantially in the depth of their computer capability. To a certain degree, the Gross National Product of a nation is a good indicator of its level of expertise.

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Experimental networking will require that a certain amount of expertise be resident in the participating institution so that minimal operations can be maintained. The technical capability of some countries surpasses this level, while in others it is marginal or almost non-existent.

This study was undertaken to determine the extent of the disparity and the amount of interest other universities in other nations had in developing a Pacific region network.

Data for this paper was gathered primarily from questionnaires sent to selected institutions in countries in the Pacific Rim. Reference books and United Nations Economic and Social Council publications were also consulted.

Country selection was based on (1) the range of a satellite placed to include the greatest number of countries; and (2) whether the country had educational institutions capable of technically supporting a ground station in network development. The Pacific Rim satellite range used in this study encompassed eastern Asia, including the USSR, mainland China, southeast Asia, westward to the Indian border, the South Pacific countries, Australia, New Zealand, Hawaii, the west coast of the United States and Canada, and Alaska.

Institutions were selected by previous interest, content of curricula and either technical ability to support a ground station or interest in using the services offered by a developing network. The proportion of institutions queried is somewhat indicative of the known capability of the country in the computer-communications field, although the USSR is an exception to the rule.

Country	No. of Inquiries	No. of Replies
Australia	4	4
Cambodia	1	-
Canada	2	2
China (Taiwan)	2	2
China (Mainland)	5	-
Fiji	1	1
Hong Kong	1	1
Indonesia	1	1
Japan	9	8
Malaysia	2	2
New Zealand	1	1
Philippines	2	2
Singapore	2	2
South Korea	3	3
South Viet Nam	1	-
Thailand	3	3
USSR	1	-
USA	9	9
TOTAL	51	41

Table 1

PACIFIC RIM NATIONS WITH NETWORKING CAPABILITY

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Of the 51 questionnaires sent out, 41 were returned, indicating at least 80% interest in such a project. Informal communications from some of the non-responding institutions indicated that they were interested but could not participate at the present time.

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3. SURVEY RESULTS

The sample from which the data was extracted represents 14 of the 18 countries considered to have computer-communications capability in the Pacific Rim. Included are the major qualified universities of Australia, Japan, the West Coast United States, and Canada, the nations which have a great majority of the technical computer-communications expertise of the region.

Interest. Interest in the network was positive though varied. The following breakdown shows as much interest in uncommitted observation as in actual participation in network planning and development.

Interest	No. of Responses
Mailing List Only	13
Using Only	6
Planning Only	3
Mailing, Planning, and Using	19

Table 2

DEGREES OF INTEREST

In terms of commitment, mailing list status would be the least involved. Using the network, considered a somewhat passive activity compared to development, is next. Planning, which involves the preparation of design and development plans, bears the highest degree of involvement.

Computing Equipment. Computing equipment used by the responding institutions were classified by size, type, and manufacturer.

Category	Purchase Price (U.S.$)	Number
Mini-Small	to $ 100,000	19
Small-Medium	$100,000 - $ 500,000	6
Medium-Large	$500,000 - $1,500,000	17
Very Large	$1,500,000+	14

Table 3

BREAKDOWN BY SIZE

The data received did not give a good basis for the determination of the size of the equipment, except insofar as a cost figure could be attached to the computer. Model numbers for some series were useful, but the modularity of the computers sometimes made this difficult. Only equipment at central computing facilities was included in this survey. Other equipment, ranging from specialized large machines to minicomputers, does exist at a number of these institutions.

In determining the size of the equipment by corresponding cost, all figures are given in $U.S., 1972. Despite the attempt to standardize this figure, some problems were experienced in determining the current rate of ex-

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change and for determining prices for external and internal economies. An attempt to derive figures for non-computer expenditures also ran into difficulty because of various systems of including personnel pay into computer system budgets.

The somewhat arbitrary delineation of categories for computer size was developed to separate the very large computation machines from the general purpose processors. The IBM 360/67, valued at $6 million, and the HITAC 8800, valued at $20 million, are examples of the very large machines, which under the breakdown in Table 3 are distinguishable from large computers, exemplified by the Burroughs 6700 and the IBM 360/50. It should be noted that unresolved problems in international rates of exchange made the relative values of some computers somewhat misleading.

Manufacturer	Number
Burroughs	4
Control Data	7
DEC (PDP)	8
Fujitsu (FACOM)	6
GE - Honeywell	1
Hitachi (HITAC)	5
Hewlett-Packard	2
IBM	24
ICL	3
Data General (NOVA)	2
Nippon Electric (NEAC)	6
UNIVAC	1
Wang	1
XDS	2

Table 4

BREAKDOWN BY MANUFACTURER

Insofar as size is concerned, the distribution of computing equipment is fairly even. If this sample is representative of a network population, the distribution indicates that there are both resources and users for the resources, a critical requirement in amassing the participants for network development.

The breakdown by manufacturers shows a domination by IBM, which accounts for 33% of the total number of computers reported. About half of the IBM computers, however, are second generation machines with capability more in the mini and small computer range. Japanese computers also showed up well, accounting for 22% of reported equipment. Almost all of the Japanese computers are installed in Japan.

The breakdown by model shows a diverse array of equipment. With the distribution shown in Table 5, processing compatibility with larger network computers and the ability to transfer overloads are possible network benefits. Also evident is a complementary arrangement of computational versus general purpose equipment, e.g., note the balancing of the B 6700's, CDC 6400's, and HITAC 8800 by the IBM 360/40's, 50, and 65.

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Model	Number
B 5500	2
6700	2
CDC 3150	1
3200	1
3300	2
6400	2
CYBER 72	1
FACOM 230	6
HITAC 10	1
850	1
5020	1
8350	1
8800	1
Honeywell 200	1
HP 2100	2
IBM 1130	7
1401	1
1620	2
7040	1
360/40	4
360/50	2
360/65	1
360/67	2
360/91	2
370/145	1
370/155	1
ICL 1940 A	1
4000	1
KDF 9	1
NOVA 800	2
NEAC 2200	6
PDP 8	2
10	1
11	4
12	1
UNIVAC 1108	1
WANG 3300	1
XDS SIGMA 5	1
SIGMA 7	1

Table 5

BREAKDOWN BY TYPE

Languages. Of the responding institutions, those who had computing facilities used FORTRAN universally. The distinction between FORTRAN II and FORTRAN IV appeared to be more of degree than of kind and though the difference does exist, the significant point is that one language is implemented on all machines in the sample.

Language	Number of Users
FORTRAN	37
COBOL	24
Algol	17
PL/1	12
Assembler	3
SNOBOL	2
Others	11

Table 6

LANGUAGES

COBOL is also a relatively widely used programming language, but not to the degree that FORTRAN is. Algol's utilization is primarily outside of the United States or on Burroughs equipment. PL/1 is implemented only on Japanese and IBM third generation equipment.

Telecommunications. Over 50% of the respondents had telecommunications capability. The differentiation between the transmission rates in Table 7 was to determine the degree of sophistication to which remote processing could be supported.

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Transmission Rates (in Bits Per Second)	No. of Responses
to 1200	20
1200 to 9600	14
9600+	6
None	18

Table 7

TELECOMMUNICATIONS CAPABILITY

Rates to 1200 bits per second can support most man-machine interaction terminals, of which the most popular type is the teletype. The 1200 to 9600 bps rate can accomodate remote job entry stations and moderate speed printing devices. Rates in excess of 9600 bps can be used for computer-to-computer communications.

The higher transmission rates are found primarily in the United States, where the ARPANET and leased lines provide capabilities up to 50 kbps. Japan is currently using teletypes and remote job entry stations, for which 50, 200, and 1200 bps speeds are used.

User Characteristics. The total number of students enrolled at the 41 responding institutions was 421,717.

No. of Students	No. of Institutions
Under 2500	9
2500 - 5000	5
5000 - 10,000	9
10,000 - 15,000	9
15,000+	9

Table 8

SIZE OF INSTITUTIONS

The smaller institutions are found in the Southeast Asia and Pacific area. The middle-sized institutions, from 2500 - 10,000 students, were fairly well distributed among the responding countries, while the larger universities were principally in Japan, Australia, and the U.S. This corresponds with the general level of computer expertise in the country.

The number of computer center users for the responding institutions exceeded 70,000. The figure includes student, faculty, and research usage.

About 10% of the students enrolled in the responding universities were taking computer courses. Of the 39,178 computing students, 2047 were candidates for computer science degrees. There was no correlation between the size of the university and the number of students taking computer courses.

User Training. Most of the institutions offered some type of training

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in programming, computer design, or computer science.

In the non-degree curricula, programming and computer design courses were offered by 23 institutions. Programming only was offered by 15; computer design only was offered by 1; and 7 institutions provided no training in the computer science area at all. Four of the institutions had no on-site computing capability.

Degrees Offered in Computer Science	No. of Institutions
Bachelor's	0
Master's	2
Doctorate	0
Bachelor's, Master's	2
Master's, Doctorate	6
Bachelor's, Master's, Doctorate	15
None	16

Table 9

DEGREE PROGRAMS

In the degree curricula, 25 of the queried institutions offered at least one degree in computer science. In many programs, advanced degrees in computer science are offered after the completion of undergraduate work in an applicable discipline.

The data indicates that a substantial amount of computer science training is taking place in the universities. Again, the universities in Australia, Canada, Japan, and the U.S. lead in the offering of computer science degrees.

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4. CONCLUSION

From the data collected from the various Pacific Rim institutions, it appears that the conditions which promulgate computer network development are present, i.e., educational costs are constantly a problem; the distribution of resources is heavily weighted in favor of the more industrialized countries; the mass of resources and users does exist even though it is not organized at the present time; and the development of a large-scale regional computer-communications network can indeed alleviate some of the shortcomings of the present situation.

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APPENDIX

INSTITUTIONS PARTICIPATING IN THE PACIFIC EDUCATIONAL COMPUTER NETWORK SURVEY

IDENTIFICATION NUMBER	COUNTRY	INSTITUTION NAME	PAGE
10	U.S.A.	UNIVERSITY OF HAWAII	A-1
20	JAPAN	TOHOKU UNIVERSITY	A-1
30	AUSTRALIA	UNIVERSITY OF SYDNEY	A-2
40	U.S.A.	STANFORD UNIVERSITY	A-2
50	U.S.A.	UNIVERSITY OF CALIFORNIA AT SANTA CRUZ	A-3
60	JAPAN	OSAKA UNIVERSITY	A-3
70	JAPAN	UNIVERSITY OF TOKYO	A-4
80	JAPAN	KYOTO UNIVERSITY	A-4
90	JAPAN	UNIVERSITY OF ELECTRO-COMMUNICATIONS	A-5
110	JAPAN	KYUSHU UNIVERSITY	A-5
120	JAPAN	NAGOYA UNIVERSITY	A-6
130	U.S.A.	UNIVERSITY OF ALASKA	A-6
140	U.S.A.	UNIVERSITY OF WASHINGTON	A-7
150	U.S.A.	UNIVERSITY OF CALIFORNIA AT LOS ANGELES	A-7
160	U.S.A.	UNIVERSITY OF CALIFORNIA AT BERKELEY	A-8
170	U.S.A.	UNIVERSITY OF SOUTHERN CALIFORNIA	A-8
180	U.S.A.	OREGON STATE UNIVERSITY	A-9
190	AUSTRALIA	UNIVERSITY OF NEWCASTLE	A-9
200	AUSTRALIA	AUSTRALIAN NATIONAL UNIVERSITY	A-10
210	AUSTRALIA	UNIVERSITY OF NEW SOUTH WALES	A-10
220	AUSTRALIA	MONASH UNIVERSITY	A-11

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240	CANADA	UNIVERSITY OF BRITISH COLUMBIA	A-11
310	CHINA, REPUBLIC OF	NATIONAL TAIWAN UNIVERSITY	A-12
320	CHINA, REPUBLIC OF	NATIONAL CHIAO TUNG UNIVERSITY	A-12
330	FIJI	UNIVERSITY OF THE SOUTH PACIFIC	A-13
340	HONG KONG	HONG KONG BAPTIST COLLEGE	A-13
350	INDONESIA	BANDUNG INSTITUTE OF TECHNOLOGY	A-14
360	SOUTH KOREA	CHONNAM NATIONAL UNIVERSITY	A-14
370	SOUTH KOREA	KOREA UNIVERSITY	A-15
380	SOUTH KOREA	KOREA INSTITUTE OF SCIENCE AND TECHNOLOGY	A-15
390	MALAYSIA	UNIVERSITY OF MALAYA	A-16
400	MALAYSIA	UNIVERSITY OF SCIENCE OF MALAYSIA	A-16
410	NEW ZEALAND	VICTORIA UNIVERSITY OF WELLINGTON	A-17
420	JAPAN	UNIVERSITY OF THE RYUKYUS	A-17
430	PHILIPPINES	UNIVERSITY OF THE PHILIPPINES	A-18
440	PHILIPPINES	MAPUA INSTITUTE OF TECHNOLOGY	A-18
450	SINGAPORE	UNIVERSITY OF SINGAPORE	A-19
460	SINGAPORE	NANYANG UNIVERSITY	A-19
470	THAILAND	KING MONGKUT'S INSTITUTE OF TECHNOLOGY	A-20
480	THAILAND	CHULALONGKORN UNIVERSITY	A-20
490	THAILAND	ASIAN INSTITUTE OF TECHNOLOGY	A-21

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RECORD ID: 010 INSTITUTION: UNIVERSITY OF HAWAII
COUNTRY: U.S.A.
INTEREST: MAILING LIST, USING AND PLANNING USING NETWORK
NUMBER OF STUDENTS: 22,000 NUMBER OF FACULTY: 3430
DEGREES OFFERED IN COMPUTER SCIENCE: M.A.
NON-DEGREE COURSES OFFERED: PROGRAMMING AND COMPUTER DESIGN
STUDENTS IN COMPUTING: 694 MAJORS IN COMPUTING: 108
MAJOR COMPUTER: IBM 360-65 COST: $ 3,500,000
SECOND COMPUTER: HP-2100 COST:
TELECOMMUNICATIONS CAPABILITY: TO 1200 BPS AND 1201 TO 9600 BPS
MAJOR LANGUAGES: FORTRAN COBOL PL/1
NUMBER OF COMPUTER USERS: 5000 NUMBER OF PROFESSIONAL STAFF: 23
NON-COMPUTER EXPENDITURES: $1,300,000
CONTACT:(1)WALTER S. YEE DIRECTOR
COMPUTING CENTER
UNIV OF HAWAII, MANOA
2525 CORREA ROAD
HONOLULU, HAWAII 96822

RECORD ID: 020 INSTITUTION: TOHOKU UNIVERSITY
COUNTRY: JAPAN
INTEREST: MAILING LIST, USING AND PLANNING USING NETWORK
NUMBER OF STUDENTS: 12,000 NUMBER OF FACULTY: 2500
DEGREES OFFERED IN COMPUTER SCIENCE: B.A., M.A., PH.D.
NON-DEGREE COURSES OFFERED: PROGRAMMING AND COMPUTER DESIGN
STUDENTS IN COMPUTING: 800 MAJORS IN COMPUTING: 200
MAJOR COMPUTER: NEAC 2200 COST: $ 7,000,000
SECOND COMPUTER: NEAC 2200 COST: $ 1,750,000
OTHER COMPUTERS: NEAC 2230 COST: $ 350,000
TELECOMMUNICATIONS CAPABILITY: TO 1200 BPS
MAJOR LANGUAGES: FORTRAN COBOL ALGOL OTHER
NUMBER OF COMPUTER USERS: 1200 NUMBER OF PROFESSIONAL STAFF: 50
NON-COMPUTER EXPENDITURES: $ 280,000
CONTACT:(1)DR. JURO OIZUMI DIRECTOR AND PROF
RSCH CTR - APPL INFO SCI
TOHOKU UNIVERSITY
KATAHIRA 2-1-1
SENDAI, JAPAN 980

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RECORD ID: 030 INSTITUTION: UNIVERSITY OF SYDNEY
COUNTRY: AUSTRALIA
INTEREST: MAILING LIST, USING AND PLANNING USING NETWORK
NUMBER OF STUDENTS: 17,000 NUMBER OF FACULTY: 1100
DEGREES OFFERED IN COMPUTER SCIENCE: B.A., M.A., PH.D
NON-DEGREE COURSES OFFERED: PROGRAMMING AND COMPUTER DESIGN
STUDENTS IN COMPUTING: 375 MAJORS IN COMPUTING: 80
MAJOR COMPUTER: IBM 7040 COST: $ 1,000,000
SECOND COMPUTER: ICL KDF9 COST: $ 1,000,000
TELECOMMUNICATIONS CAPABILITY: TO 1200 BPS, 1201 TO 9600 BPS, AND 9600+ BPS
MAJOR LANGUAGES: FORTRAN COBOL ALGOL
NUMBER OF COMPUTER USERS: 500 NUMBER OF PROFESSIONAL STAFF: 12
NON-COMPUTER EXPENDITURES: $ 400,000
CONTACT:(1)MR. R. B. DONNELLY MANAGER
BASSER COMPUTING CENTER
UNIVERSITY OF SYDNEY
SYDNEY, 2006, N.S.W.
AUSTRALIA

RECORD ID: 040 INSTITUTION: STANFORD UNIVERSITY
COUNTRY: U.S.A.
INTEREST: MAILING LIST
NUMBER OF STUDENTS: 12,384 NUMBER OF FACULTY: 1300
DEGREES OFFERED IN COMPUTER SCIENCE: M.A., PH.D.
NON-DEGREE COURSES OFFERED: PROGRAMMING AND COMPUTER DESIGN
STUDENTS IN COMPUTING: 2500 MAJORS IN COMPUTING: 119
MAJOR COMPUTER: IBM 360-67 COST: $ 2,200,000
SECOND COMPUTER: IBM 370-145 COST: $ 641,000
OTHER COMPUTERS: IBM 360-91 COST: $ 4,500,000
TELECOMMUNICATIONS CAPABILITY: TO 1200 BPS, 1201 TO 9600 BPS, AND 9600+ BPS
MAJOR LANGUAGES: FORTRAN COBOL PL/1 ASSEMBLER ALGOL
NUMBER OF COMPUTER USERS: 5000 NUMBER OF PROFESSIONAL STAFF: 110
NON-COMPUTER EXPENDITURES: $3,994,000
CONTACT:(1)MISS EILEEN FURUYAMA SECRETARY
STANFORD COMPUTATION CENTER
STANFORD UNIVERSITY
STANFORD, CALIF. 94305

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RECORD ID: 050 INSTITUTION: UNIVERSITY OF CALIFORNIA AT SANTA CRUZ
COUNTRY: U.S.A.
INTEREST: PARTICIPATE IN PLANNING NETWORK
NUMBER OF STUDENTS: 5000 NUMBER OF FACULTY: 357
DEGREES OFFERED IN COMPUTER SCIENCE: B.A., M.A., PH.D.
NON-DEGREE COURSES OFFERED: PROGRAMMING AND COMPUTER DESIGN
STUDENTS IN COMPUTING: 500 MAJORS IN COMPUTING: 10
MAJOR COMPUTER: IBM 360-40 COST: $ 700,000
SECOND COMPUTER: DEC PDP 11-45 COST: $ 100,000
OTHER COMPUTERS: DEC PDP 11-20 COST: $ 45,000
TELECOMMUNICATIONS CAPABILITY: TO 1200 BPS, 1201 TO 9600 BPS, AND 9600+ BPS
MAJOR LANGUAGES: FORTRAN COBOL PL/1 ALGOL
NUMBER OF COMPUTER USERS: 9 NUMBER OF PROFESSIONAL STAFF: 10
NON-COMPUTER EXPENDITURES: $ 250,000
CONTACT:(1)HARRY D. HUSKEY PROF AND DIRECTOR
COMPUTER CENTER
UNIV OF CALIFORNIA AT
SANTA CRUZ
SANTA CRUZ, CALIF. 95060

RECORD ID: 060 INSTITUTION: OSAKA UNIVERSITY
COUNTRY: JAPAN
INTEREST: MAILING LIST
NUMBER OF STUDENTS: 13,000 NUMBER OF FACULTY: 2000
DEGREES OFFERED IN COMPUTER SCIENCE: B.A., M.A., PH.D.
NON-DEGREE COURSES OFFERED: PROGRAMMING AND COMPUTER DESIGN
STUDENTS IN COMPUTING: 800 MAJORS IN COMPUTING: 50
MAJOR COMPUTER: NEAC 2200 COST: $ 2,000,000
SECOND COMPUTER: NEAC 2200 COST: $ 1,000,000
TELECOMMUNICATIONS CAPABILITY: TO 1200 BPS
MAJOR LANGUAGES: FORTRAN PL/1 ALGOL
NUMBER OF COMPUTER USERS: 800 NUMBER OF PROFESSIONAL STAFF: 15
NON-COMPUTER EXPENDITURES: $ 200,000
CONTACT:(1)SHUJI TAKAGI DIRECTOR
COMPUTATION CENTER
OSAKA UNIVERSITY
YAMADA KAMI, SUITA
OSAKA, JAPAN

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RECORD ID: 070 INSTITUTION: UNIVERSITY OF TOKYO
COUNTRY: JAPAN
INTEREST: MAILING LIST, USING AND PLANNING USING NETWORK
NUMBER OF STUDENTS: 12,000 NUMBER OF FACULTY: 2000
DEGREES OFFERED IN COMPUTER SCIENCE: B.A., M.A., PH.D.
NON-DEGREE COURSES OFFERED: PROGRAMMING
STUDENTS IN COMPUTING: 2,000 MAJORS IN COMPUTING: 100
MAJOR COMPUTER: HITAC 8800,8700 COST: $20,000,000
SECOND COMPUTER: HITAC 5020E COST: $ 4,000,000
OTHER COMPUTERS: HITAC 10 COST: $ 50,000
TELECOMMUNICATIONS CAPABILITY: TO 1200 BPS AND 1201 TO 9600 BPS
MAJOR LANGUAGES: FORTRAN COBOL PL/1 OTHER
NUMBER OF COMPUTER USERS: 2000 NUMBER OF PROFESSIONAL STAFF: 20
NON-COMPUTER EXPENDITURES: $ 400,000
CONTACT:(1)HARUHISA ISHIDA ASSOCIATE PROFESSOR
COMPUTER CENTRE
UNIVERSITY OF TOKYO
2-11-15 YAYOI, BUNKYOKU
TOKYO, JAPAN

RECORD ID: 080 INSTITUTION: KYOTO UNIVERSITY
COUNTRY: JAPAN
INTEREST: MAILING LIST
NUMBER OF STUDENTS: 14,500 NUMBER OF FACULTY: 1250
DEGREES OFFERED IN COMPUTER SCIENCE: NONE
NON-DEGREE COURSES OFFERED: NONE
STUDENTS IN COMPUTING: 300 MAJORS IN COMPUTING:
MAJOR COMPUTER: FACOM 230 COST: $ 1,200,000
TELECOMMUNICATIONS CAPABILITY: TO 1200 BPS
MAJOR LANGUAGES: FORTRAN COBOL PL/1 ALGOL
NUMBER OF COMPUTER USERS: 1900 NUMBER OF PROFESSIONAL STAFF: 55
NON-COMPUTER EXPENDITURES: $ 550,000
CONTACT:(1)DR. HIROSHI NISHIHARA DIRECTOR
DATA PROCESSING CENTER
KYOTO UNIVERSITY
YOSHIDA-HONMACHI
SAKYO-KU, KYOTO, JAPAN

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RECORD ID: 090 INSTITUTION: UNIVERSITY OF ELECTRO-COMMUNICATIONS
COUNTRY: JAPAN
INTEREST: MAILING LIST, USING AND PLANNING USING NETWORK
NUMBER OF STUDENTS: 2200 NUMBER OF FACULTY: 200
DEGREES OFFERED IN COMPUTER SCIENCE: B.A., M.A.
NON-DEGREE COURSES OFFERED: PROGRAMMING AND COMPUTER DESIGN
STUDENTS IN COMPUTING: 120 MAJORS IN COMPUTING: NONE
MAJOR COMPUTER: HITAC 8350 COST:
TELECOMMUNICATIONS CAPABILITY: NONE
MAJOR LANGUAGES: NONE
NUMBER OF COMPUTER USERS: 0 NUMBER OF PROFESSIONAL STAFF: 0
NON-COMPUTER EXPENDITURES:
CONTACT:(1)ICHIRO ENDO PROFESSOR
U OF ELECTRO-COMMUNICATIONS
1-5-1, CHOFU-GA-OKA, CHO
CHOFU-SHI
TOKYO, 182, JAPAN

RECORD ID: 110 INSTITUTION: KYUSHU UNIVERSITY
COUNTRY: JAPAN
INTEREST: MAILING LIST AND USING NETWORK
NUMBER OF STUDENTS: 10,000 NUMBER OF FACULTY: 5000
DEGREES OFFERED IN COMPUTER SCIENCE: B.A., M.A., PH.D.
NON-DEGREE COURSES OFFERED: PROGRAMMING AND COMPUTER DESIGN
STUDENTS IN COMPUTING: 800 MAJORS IN COMPUTING: 50
MAJOR COMPUTER: FACOM 230 COST: $ 4,000,000
SECOND COMPUTER: FACOM 230 COST: $ 700,000
TELECOMMUNICATIONS CAPABILITY: TO 1200 BPS AND 1201 TO 9600 BPS
MAJOR LANGUAGES: FORTRAN COBOL PL/1 ALGOL
NUMBER OF COMPUTER USERS: 1200 NUMBER OF PROFESSIONAL STAFF: 30
NON-COMPUTER EXPENDITURES: $ 250,000
CONTACT:(1)MASARU TAKATA DIRECTOR AND PROF
COMPUTER CENTER
KYUSHU UNIVERSITY
HAKOZAKI, FUJUOKA, JAPAN

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RECORD ID: 120 INSTITUTION: NAGOYA UNIVERSITY
COUNTRY: JAPAN
INTEREST: MAILING LIST, USING AND PLANNING USING NETWORK
NUMBER OF STUDENTS: 8000 NUMBER OF FACULTY: 1600
DEGREES OFFERED IN COMPUTER SCIENCE: M.A., PH.D.
NON-DEGREE COURSES OFFERED: PROGRAMMING
STUDENTS IN COMPUTING: 400 MAJORS IN COMPUTING: 10
MAJOR COMPUTER: FACOM 230 COST: $ 4,000,000
SECOND COMPUTER: FACOM 230 COST:
OTHER COMPUTERS: HITAC 850 COST: $ 800,000
TELECOMMUNICATIONS CAPABILITY: TO 1200 BPS
MAJOR LANGUAGES: FORTRAN COBOL PL/1 ALGOL
NUMBER OF COMPUTER USERS: 600 NUMBER OF PROFESSIONAL STAFF: 30
NON-COMPUTER EXPENDITURES: $ 200,000
CONTACT:(1)TERUO FUKUMURA PROFESSOR
FACULTY OF ENGINEERING
NAGOYA UNIVERSITY
CHIKUSA-KU, FURO-CHO
NAGOYA, 464, JAPAN

RECORD ID: 130 INSTITUTION: UNIVERSITY OF ALASKA
COUNTRY: U.S.A.
INTEREST: MAILING LIST, USING AND PLANNING USING NETWORK
NUMBER OF STUDENTS: 6000 NUMBER OF FACULTY: 500
DEGREES OFFERED IN COMPUTER SCIENCE: NONE
NON-DEGREE COURSES OFFERED: PROGRAMMING AND COMPUTER DESIGN
STUDENTS IN COMPUTING: 200 MAJORS IN COMPUTING: 0
MAJOR COMPUTER: IBM 360-40 COST: $ 700,000
SECOND COMPUTER: NOVA 800 COST: $ 60,000
TELECOMMUNICATIONS CAPABILITY: TO 1200 BPS
MAJOR LANGUAGES: FORTRAN COBOL
NUMBER OF COMPUTER USERS: 100 NUMBER OF PROFESSIONAL STAFF: 20
NON-COMPUTER EXPENDITURES: $ 400,000
CONTACT:(1)EDWARD J. GAUSS DIRECTOR
COMPUTER CENTER
UNIVERSITY OF ALASKA
FAIRBANKS, ALASKA 99701

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RECORD ID: 140 INSTITUTION: UNIVERSITY OF WASHINGTON
COUNTRY: U.S.A.
INTEREST: MAILING LIST, USING AND PLANNING USING NETWORK
NUMBER OF STUDENTS: 34,000 NUMBER OF FACULTY: 2300
DEGREES OFFERED IN COMPUTER SCIENCE: B.A., M.A., PH.D.
NON-DEGREE COURSES OFFERED: PROGRAMMING AND COMPUTER DESIGN
STUDENTS IN COMPUTING: 10,000 MAJORS IN COMPUTING: 60
MAJOR COMPUTER: CDC 6400 COST: $ 2,300,000
SECOND COMPUTER: BURROUGHS B5500 COST: $ 900,000
OTHER COMPUTERS: XDS SIGMA 5 COST: $ 400,000
TELECOMMUNICATIONS CAPABILITY: TO 1200 BPS AND 1201 TO 9600 BPS
MAJOR LANGUAGES: FORTRAN COBOL ALGOL OTHER
NUMBER OF COMPUTER USERS: 15,000 NUMBER OF PROFESSIONAL STAFF: 60
NON-COMPUTER EXPENDITURES: $1,600,000
CONTACT:(1)MR. ROBERT G. GILLESPIE DIRECTOR (2)HELLMUT GOLDE PROFESSOR
COMPUTER CENTER
COMPUTER SCI GROUP FC-10
UNIVERSITY OF WASHINGTON
SEATTLE, WASH. 98195

(2)HELLMUT GOLDE PROFESSOR
COMPUTER CENTER
COMPUTER SCIENCE GROUP FC-10
UNIVERSITY OF WASHINGTON
SEATTLE, WASH. 98195

RECORD ID: 150 INSTITUTION: UNIVERSITY OF CALIFORNIA AT LOS ANGELES
COUNTRY: U.S.A.
INTEREST: PARTICIPATE IN PLANNING NETWORK
NUMBER OF STUDENTS: 28,000 NUMBER OF FACULTY: 1200
DEGREES OFFERED IN COMPUTER SCIENCE: M.A., PH.D.
NON-DEGREE COURSES OFFERED: PROGRAMMING AND COMPUTER DESIGN
STUDENTS IN COMPUTING: 1500 MAJORS IN COMPUTING: 60
MAJOR COMPUTER: IBM 360-91 COST:
SECOND COMPUTER: XDS SIGMA 7 COST:
TELECOMMUNICATIONS CAPABILITY: TO 1200 BPS, 1201 TO 9600 BPS, AND 9600+ BPS
MAJOR LANGUAGES: FORTRAN COBOL PL/1 OTHER
NUMBER OF COMPUTER USERS: 5000 NUMBER OF PROFESSIONAL STAFF: 50
NON-COMPUTER EXPENDITURES:
CONTACT:(1)WALTER J. KARPLUS PROF AND CHAIRMAN
COMPUTER SCIENCE DEPT
3732 BOELTER HALL (ENGR)
UNIVERSITY OF CALIFORNIA
LOS ANGELES, CALIF 90024

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RECORD ID: 160 INSTITUTION: UNIVERSITY OF CALIFORNIA AT BERKELEY
COUNTRY: U.S.A.
INTEREST: MAILING LIST AND USING NETWORK
NUMBER OF STUDENTS: 27,800 NUMBER OF FACULTY: 1600
DEGREES OFFERED IN COMPUTER SCIENCE: B.A., M.A., PH.D.
NON-DEGREE COURSES OFFERED: PROGRAMMING AND COMPUTER DESIGN
STUDENTS IN COMPUTING: 1000 MAJORS IN COMPUTING: 220
MAJOR COMPUTER: CDC 6400 COST: $ 2,000,000
TELECOMMUNICATIONS CAPABILITY: TO 1200 BPS, 1201 TO 9600 BPS, AND 9600+ BPS
MAJOR LANGUAGES: FORTRAN ALGOL SNOBOL
NUMBER OF COMPUTER USERS: 10,000 NUMBER OF PROFESSIONAL STAFF: 70
NON-COMPUTER EXPENDITURES: $1,300,000
CONTACT:(1)D. R. WILLIS ASST TO CHANCELLOR (COMPUTING)
200 CALIFORNIA HALL
UNIVERSITY OF CALIFORNIA
BERKELEY, CALIF 94720

RECORD ID: 170 INSTITUTION: UNIVERSITY OF SOUTHERN CALIFORNIA
COUNTRY: U.S.A.
INTEREST: MAILING LIST
NUMBER OF STUDENTS: 20,000 NUMBER OF FACULTY: 2000
DEGREES OFFERED IN COMPUTER SCIENCE: B.A., M.A., PH.D.
NON-DEGREE COURSES OFFERED: PROGRAMMING AND COMPUTER DESIGN
STUDENTS IN COMPUTING: 400 MAJORS IN COMPUTING: 220
MAJOR COMPUTER: DEC PDP 10 COST:
SECOND COMPUTER: IBM 370-155 COST:
OTHER COMPUTERS: STANDARD IC-4000 COST:
TELECOMMUNICATIONS CAPABILITY: 9600+ BPS
MAJOR LANGUAGES: FORTRAN PL/1 OTHER
NUMBER OF COMPUTER USERS: 1500 NUMBER OF PROFESSIONAL STAFF: 30
NON-COMPUTER EXPENDITURES:
CONTACT:(1)JOHN HEAFNER
U OF SOUTHERN CALIFORNIA
INFO SCIENCES INSTITUTE
4676 ADMIRALTY WAY
MARINA DEL REY, CA 90291

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RECORD ID: 180 INSTITUTION: OREGON STATE UNIVERSITY
COUNTRY: U.S.A.
INTEREST: MAILING LIST
NUMBER OF STUDENTS: 15,300 NUMBER OF FACULTY: 2500
DEGREES OFFERED IN COMPUTER SCIENCE: B.A., M.A., PH.D.
NON-DEGREE COURSES OFFERED: PROGRAMMING AND COMPUTER DESIGN
STUDENTS IN COMPUTING: 2500 MAJORS IN COMPUTING: 300
MAJOR COMPUTER: CYC 3300 COST: $ 1,300,000
SECOND COMPUTER: DEC PDP 8 COST: $ 80,000
OTHER COMPUTERS: DATA GENERAL NOVA COST: $ 10,000
TELECOMMUNICATIONS CAPABILITY: TO 1200 BPS AND 1201 TO 9600 BPS
MAJOR LANGUAGES: FORTRAN COBOL ALGOL OTHER
NUMBER OF COMPUTER USERS: 9800 NUMBER OF PROFESSIONAL STAFF: 50
NON-COMPUTER EXPENDITURES: $ 900,000
CONTACT:(1)DR. LARRY C. HUNTER DIRECTOR
COMPUTER CENTER
OREGON STATE UNIVERSITY
CORVALLIS, OREGON 97330

RECORD ID: 190 INSTITUTION: UNIVERSITY OF NEWCASTLE
COUNTRY: AUSTRALIA
INTEREST: MAILING LIST, USING AND PLANNING USING NETWORK
NUMBER OF STUDENTS: 100 NUMBER OF FACULTY: 9
DEGREES OFFERED IN COMPUTER SCIENCE: B.A., M.A., PH.D.
NON-DEGREE COURSES OFFERED: PROGRAMMING AND COMPUTER DESIGN
STUDENTS IN COMPUTING: 50 MAJORS IN COMPUTING:
MAJOR COMPUTER: DEC PDP 11 COST: $ 60,000
SECOND COMPUTER: DEC PDP 12 COST: $ 20,000
OTHER COMPUTERS: ICL 1904A COST: $ 500,000
TELECOMMUNICATIONS CAPABILITY: TO 1200 BPS
MAJOR LANGUAGES: FORTRAN COBOL ALGOL OTHER
NUMBER OF COMPUTER USERS: 80 NUMBER OF PROFESSIONAL STAFF: 2
NON-COMPUTER EXPENDITURES:
CONTACT:(1)DR. JOHN MOORE
UNIVERSITY OF NEWCASTLE
DEPT. OF ELECTRICAL ENGR
NEWCASTLE, N.S.W., 2308
AUSTRALIA

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RECORD ID: 200 INSTITUTION: AUSTRALIAN NATIONAL UNIVERSITY
COUNTRY: AUSTRALIA
INTEREST: MAILING LIST, USING AND PLANNING USING NETWORK
NUMBER OF STUDENTS: 5000 NUMBER OF FACULTY: 850
DEGREES OFFERED IN COMPUTER SCIENCE: M.A., PH.D.
NON-DEGREE COURSES OFFERED: PROGRAMMING AND COMPUTER DESIGN
STUDENTS IN COMPUTING: 250 MAJORS IN COMPUTING: 30
MAJOR COMPUTER: UNIVAC U1108 COST:
SECOND COMPUTER: IBM 360-50 COST:
OTHER COMPUTERS: DEC 11-45 COST:
TELECOMMUNICATIONS CAPABILITY: TO 1200 BPS AND 1201 TO 9600 BPS
MAJOR LANGUAGES: FORTRAN
NUMBER OF COMPUTER USERS: 500 NUMBER OF PROFESSIONAL STAFF: 30
NON-COMPUTER EXPENDITURES: $ 750,000
CONTACT:(1)M. R. OSBORNE HEAD
COMPUTER CENTER
AUSTRALIAN NATIONAL UNIV
P. O. BOX 4
CANBERRA, 2600, A.C.T.
AUSTRALIA

RECORD ID: 210 INSTITUTION: UNIVERSITY OF NEW SOUTH WALES
COUNTRY: AUSTRALIA
INTEREST: MAILING LIST, USING AND PLANNING USING NETWORK
NUMBER OF STUDENTS: 15,000 NUMBER OF FACULTY: 1200
DEGREES OFFERED IN COMPUTER SCIENCE: B.A., M.A., PH.D.
NON-DEGREE COURSES OFFERED: PROGRAMMING AND COMPUTER DESIGN
STUDENTS IN COMPUTING: 3000 MAJORS IN COMPUTING: 40
MAJOR COMPUTER: IBM 360-50 COST: $ 900,000
TELECOMMUNICATIONS CAPABILITY: NONE
MAJOR LANGUAGES: FORTRAN PL/1 ALGOL SNOBOL
NUMBER OF COMPUTER USERS: 200 NUMBER OF PROFESSIONAL STAFF: 8
NON-COMPUTER EXPENDITURES: $ 150,000
CONTACT:(1)M. W. ALLEN PROFESSOR
UNIV OF NEW SOUTH WALES
SCH OF ELECTRICAL ENGR
P.O. BOX 1, KENSINGTON
2033, N.S.W., AUSTRALIA

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RECORD ID: 220 INSTITUTION: MONASH UNIVERSITY
COUNTRY: AUSTRALIA
INTEREST: MAILING LIST
NUMBER OF STUDENTS: 12,000 NUMBER OF FACULTY: 1200
DEGREES OFFERED IN COMPUTER SCIENCE: B.A., M.A., PH.D.
NON-DEGREE COURSES OFFERED: PROGRAMMING
STUDENTS IN COMPUTING: 1000 MAJORS IN COMPUTING: 180
MAJOR COMPUTER: CDC 3200 COST: $ 600,000
SECOND COMPUTER: BURROUGHS B5500X2 COST: $ 800,000
OTHER COMPUTERS: BURROUGHS B6700X1 COST: $ 1,400,000
TELECOMMUNICATIONS CAPABILITY: TO 1200 BPS
MAJOR LANGUAGES: FORTRAN COBOL ALGOL
NUMBER OF COMPUTER USERS: 300 NUMBER OF PROFESSIONAL STAFF: 100
NON-COMPUTER EXPENDITURES: $1,000,000
CONTACT:(1)DR. C. J. BELLAMY DIRECTOR
MONASH UNIVERSITY
COMPUTER CENTRE
CLAYTON, VICTORIA, 3168
AUSTRALIA

RECORD ID: 240 INSTITUTION: UNIVERSITY OF BRITISH COLUMBIA
COUNTRY: CANADA
INTEREST: MAILING LIST
NUMBER OF STUDENTS: 20,000 NUMBER OF FACULTY: 1800
DEGREES OFFERED IN COMPUTER SCIENCE: B.A., M.A., PH.D.
NON-DEGREE COURSES OFFERED: PROGRAMMING AND COMPUTER DESIGN
STUDENTS IN COMPUTING: 2000 MAJORS IN COMPUTING: 50
MAJOR COMPUTER: IBM 360-67 COST: $ 6,000,000
SECOND COMPUTER: HONEYWELL 200 COST:
OTHER COMPUTERS: IBM 1130 COST:
TELECOMMUNICATIONS CAPABILITY: TO 1200 BPS AND 1201 TO 9600 BPS
MAJOR LANGUAGES: FORTRAN COBOL ALGOL OTHER
NUMBER OF COMPUTER USERS: 2500 NUMBER OF PROFESSIONAL STAFF: 37
NON-COMPUTER EXPENDITURES: $ 860,000
CONTACT:(1)J. M. KENNEDY DIRECTOR
COMPUTING CENTRE
UNIV OF BRITISH COLUMBIA
VANCOUVER 8
BRITISH COLUMBIA, CANADA

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RECORD ID: 310 INSTITUTION: NATIONAL TAIWAN UNIVERSITY
COUNTRY: CHINA, REPUBLIC OF
INTEREST: MAILING LIST, USING AND PLANNING USING NETWORK
NUMBER OF STUDENTS: 11,151 NUMBER OF FACULTY: 1136
DEGREES OFFERED IN COMPUTER SCIENCE: B.A., M.A.
NON-DEGREE COURSES OFFERED: PROGRAMMING AND COMPUTER DESIGN
STUDENTS IN COMPUTING: MAJORS IN COMPUTING: 70
MAJOR COMPUTER: CDC 3150 COST: $ 9,000
SECOND COMPUTER: HP 2100A COST: $ 19,000
OTHER COMPUTERS: DEC PDP8-E COST: $ 7,000
TELECOMMUNICATIONS CAPABILITY: NONE
MAJOR LANGUAGES: FORTRAN COBOL ALGOL
NUMBER OF COMPUTER USERS: 2100 NUMBER OF PROFESSIONAL STAFF: 50
NON-COMPUTER EXPENDITURES: $ 50,000
CONTACT:(1)JIH-CHEN MA PROF AND CHAIRMAN
DEPT OF ELECTRICAL ENGR
NATIONAL TAIWAN UNIV
TAIPEI, TAIWAN, R.O.C.

RECORD ID: 320 INSTITUTION: NATIONAL CHIAO TUNG UNIVERSITY
COUNTRY: CHINA, REPUBLIC OF
INTEREST: MAILING LIST, USING AND PLANNING USING NETWORK
NUMBER OF STUDENTS: 1000 NUMBER OF FACULTY: 100
DEGREES OFFERED IN COMPUTER SCIENCE: B.A., M.A., PH.D.
NON-DEGREE COURSES OFFERED: PROGRAMMING AND COMPUTER DESIGN
STUDENTS IN COMPUTING: 300 MAJORS IN COMPUTING: 70
MAJOR COMPUTER: IBM 1620 COST: $ 100,000
SECOND COMPUTER: WANG 3300 COST: $ 30,000
OTHER COMPUTERS: IBM 360-40 COST:
TELECOMMUNICATIONS CAPABILITY: 1201 TO 9600 BPS
MAJOR LANGUAGES: FORTRAN PL/1 OTHER
NUMBER OF COMPUTER USERS: 400 NUMBER OF PROFESSIONAL STAFF: 10
NON-COMPUTER EXPENDITURES: $ 25,000
CONTACT:(1)CHI CHANG LEE DIRECTOR
COMPUTING CENTER
NATIONAL CHIAO TUNG UNIV
HSINCHU, TAIWAN, R.O.C.

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RECORD ID: 330 INSTITUTION: UNIVERSITY OF THE SOUTH PACIFIC
COUNTRY: FIJI
INTEREST: MAILING LIST AND USING NETWORK
NUMBER OF STUDENTS: 850 NUMBER OF FACULTY: 100
DEGREES OFFERED IN COMPUTER SCIENCE: NONE
NON-DEGREE COURSES OFFERED: NONE
STUDENTS IN COMPUTING: 0 MAJORS IN COMPUTING: 0
MAJOR COMPUTER: NONE COST:
TELECOMMUNICATIONS CAPABILITY: NONE
MAJOR LANGUAGES: NONE
NUMBER OF COMPUTER USERS: 0 NUMBER OF PROFESSIONAL STAFF: 0
NON-COMPUTER EXPENDITURES:
CONTACT:(1)DR. PREM C. PRASAD LECTURER
BIOGEOGRAPHY
P.O. BOX 1168
U OF THE SOUTH PACIFIC
SUVA, FIJI

RECORD ID: 340 INSTITUTION: HONG KONG BAPTIST COLLEGE
COUNTRY: HONG KONG
INTEREST: MAILING LIST
NUMBER OF STUDENTS: 3400 NUMBER OF FACULTY: 300
DEGREES OFFERED IN COMPUTER SCIENCE: NONE
NON-DEGREE COURSES OFFERED: PROGRAMMING
STUDENTS IN COMPUTING: 300 MAJORS IN COMPUTING: 0
MAJOR COMPUTER: IBM 1130 COST: $ 1500
TELECOMMUNICATIONS CAPABILITY: NONE
MAJOR LANGUAGES: FORTRAN ASSEMBLER OTHER
NUMBER OF COMPUTER USERS: 20 NUMBER OF PROFESSIONAL STAFF: 6
NON-COMPUTER EXPENDITURES: $ 13,600
CONTACT:(1)LARRY E. ALLEN DIRECTOR
COMPUTER CENTER
224 WATERLOO ROAD
KOWLOON, HONG KONG

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RECORD ID: 350 INSTITUTION: BANDUNG INSTITUTE OF TECHNOLOGY
COUNTRY: INDONESIA
INTEREST: MAILING LIST, USING AND PLANNING USING NETWORK
NUMBER OF STUDENTS: 7700 NUMBER OF FACULTY: 350
DEGREES OFFERED IN COMPUTER SCIENCE: NONE
NON-DEGREE COURSES OFFERED: PROGRAMMING AND COMPUTER DESIGN
STUDENTS IN COMPUTING: 220 MAJORS IN COMPUTING: 0
MAJOR COMPUTER: IBM 1401 COST:
TELECOMMUNICATIONS CAPABILITY: NONE
MAJOR LANGUAGES: FORTRAN
NUMBER OF COMPUTER USERS: 50 NUMBER OF PROFESSIONAL STAFF: 15
NON-COMPUTER EXPENDITURES:
CONTACT:(1)HARIJONO DJOJODIHARDJO DIRECTOR (2)DR. ISKANDAR ALISJAHBANA HEAD
COMPUTER SCIENCES DIV
BANDUNG INST OF TECH
DJ. GANESHA 10
GEDUNG RADAR
BANDUNG, INDONESIA

RADIO AND MICROWAVE
BANDUNG INST OF TECH
DJ. GANESHA 10
GEDUNG RADAR
BANDUNG, INDONESIA

RECORD ID: 360 INSTITUTION: CHONNAM NATIONAL UNIVERSITY
COUNTRY: SOUTH KOREA
INTEREST: MAILING LIST AND USING NETWORK
NUMBER OF STUDENTS: 5800 NUMBER OF FACULTY: 321
DEGREES OFFERED IN COMPUTER SCIENCE: NONE
NON-DEGREE COURSES OFFERED: PROGRAMMING
STUDENTS IN COMPUTING: 0 MAJORS IN COMPUTING: 0
MAJOR COMPUTER: NONE COST:
TELECOMMUNICATIONS CAPABILITY: NONE
MAJOR LANGUAGES: NONE
NUMBER OF COMPUTER USERS: 0 NUMBER OF PROFESSIONAL STAFF: 0
NON-COMPUTER EXPENDITURES:
CONTACT:(1)DANG-JIN CHOI HEAD
COLLEGE OF ENGINEERING
CHONNAM NATIONAL UNIV
318 YONGBONG DONG
KWANGJU, KOREA

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RECORD ID: 370 INSTITUTION: KOREA UNIVERSITY
COUNTRY: SOUTH KOREA
INTEREST: MAILING LIST AND USING NETWORK
NUMBER OF STUDENTS: 10,000 NUMBER OF FACULTY: 250
DEGREES OFFERED IN COMPUTER SCIENCE: NONE
NON-DEGREE COURSES OFFERED: PROGRAMMING AND COMPUTER DESIGN
STUDENTS IN COMPUTING: 1000 MAJORS IN COMPUTING: 0
MAJOR COMPUTER: IBM 1130 COST: $ 30,000
TELECOMMUNICATIONS CAPABILITY: NONE
MAJOR LANGUAGES: FORTRAN COBOL OTHER
NUMBER OF COMPUTER USERS: 700 NUMBER OF PROFESSIONAL STAFF: 4
NON-COMPUTER EXPENDITURES: $ 25,000
CONTACT:(1)KANG WOONG-KI DIRECTOR
COMPUTER CENTER
KOREA UNIVERSITY
ANAM-DONG 1
SEOUL, KOREA

RECORD ID: 380 INSTITUTION: KOREA INSTITUTE OF SCIENCE AND TECHNOLOGY
COUNTRY: SOUTH KOREA
INTEREST: MAILING LIST, USING AND PLANNING USING NETWORK
NUMBER OF STUDENTS: 50 NUMBER OF FACULTY: 5
DEGREES OFFERED IN COMPUTER SCIENCE: NONE
NON-DEGREE COURSES OFFERED: PROGRAMMING
STUDENTS IN COMPUTING: 500 MAJORS IN COMPUTING: 0
MAJOR COMPUTER: CDC CYBER 72 COST: $ 1,700,000
SECOND COMPUTER: CDC 3300 COST: $ 700,000
OTHER COMPUTERS: CDC OCR 936 COST: $ 250,000
TELECOMMUNICATIONS CAPABILITY: 1201 TO 9600 BPS
MAJOR LANGUAGES: FORTRAN COBOL
NUMBER OF COMPUTER USERS: 170 NUMBER OF PROFESSIONAL STAFF: 100
NON-COMPUTER EXPENDITURES: $ 500,000
CONTACT:(1)KI SOO SUNG MANAGER, EDP DEPT.
KOREA INST OF SCI & TECH
P.O. BOX 131
CHEONG RYANG
SEOUL, KOREA

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RECORD ID: 390 INSTITUTION: UNIVERSITY OF MALAYA
COUNTRY: MALAYSIA
INTEREST: MAILING LIST, USING AND PLANNING USING NETWORK
NUMBER OF STUDENTS: 10,000 NUMBER OF FACULTY: 500
DEGREES OFFERED IN COMPUTER SCIENCE: NONE
NON-DEGREE COURSES OFFERED: PROGRAMMING
STUDENTS IN COMPUTING: 600 MAJORS IN COMPUTING: 0
MAJOR COMPUTER: IBM 1130 COST: $ 150,000
TELECOMMUNICATIONS CAPABILITY: NONE
MAJOR LANGUAGES: FORTRAN COBOL
NUMBER OF COMPUTER USERS: 200 NUMBER OF PROFESSIONAL STAFF: 3
NON-COMPUTER EXPENDITURES: $ 60,000
CONTACT:(1)ONG YEEN FOOK ACTING DIRECTOR
COMPUTER CENTRE
UNIVERSITY OF MALAYA
KUALA LUMPUR
SELANGOR, MALAYSIA

RECORD ID: 400 INSTITUTION: UNIVERSITY OF SCIENCE OF MALAYSIA
COUNTRY: MALAYSIA
INTEREST: MAILING LIST
NUMBER OF STUDENTS: 1340 NUMBER OF FACULTY: 150
DEGREES OFFERED IN COMPUTER SCIENCE: NONE
NON-DEGREE COURSES OFFERED: PROGRAMMING
STUDENTS IN COMPUTING: 300 MAJORS IN COMPUTING: 0
MAJOR COMPUTER: COST:
TELECOMMUNICATIONS CAPABILITY: NONE
MAJOR LANGUAGES: FORTRAN
NUMBER OF COMPUTER USERS: 0 NUMBER OF PROFESSIONAL STAFF: 0
NON-COMPUTER EXPENDITURES:
CONTACT:(1)DR. K.C. LEE LECTURER
COMPUTER SCIENCE
SCH OF PHYSICS AND MATH
UNIV OF SCIENCE, PENANG
MALAYSIA

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RECORD ID: 410 INSTITUTION: VICTORIA UNIVERSITY OF WELLINGTON
COUNTRY: NEW ZEALAND
INTEREST: MAILING LIST, USING AND PLANNING USING NETWORK
NUMBER OF STUDENTS: 6500 NUMBER OF FACULTY: 380
DEGREES OFFERED IN COMPUTER SCIENCE: M.A., PH.D.
NON-DEGREE COURSES OFFERED: PROGRAMMING
STUDENTS IN COMPUTING: 200 MAJORS IN COMPUTING: 10
MAJOR COMPUTER: BURROUGHS B6700 COST: $ 1,000,000
TELECOMMUNICATIONS CAPABILITY: TO 1200 BPS
MAJOR LANGUAGES: FORTRAN ALGOL
NUMBER OF COMPUTER USERS: 50 NUMBER OF PROFESSIONAL STAFF: 3
NON-COMPUTER EXPENDITURES:
CONTACT:(1)G.A. VIGNAUX PROFESSOR
DEPT OF INFO SCIENCE
VICTORIA U OF WELLINGTON
P.O. BOX 196
WELLINGTON, NEW ZEALAND

RECORD ID: 420 INSTITUTION: UNIVERSITY OF THE RYUKYUS
COUNTRY: JAPAN
INTEREST: MAILING LIST, USING AND PLANNING USING NETWORK
NUMBER OF STUDENTS: 4000 NUMBER OF FACULTY: 700
DEGREES OFFERED IN COMPUTER SCIENCE: NONE
NON-DEGREE COURSES OFFERED: PROGRAMMING AND COMPUTER DESIGN
STUDENTS IN COMPUTING: 100 MAJORS IN COMPUTING: 0
MAJOR COMPUTER: FACOM 230 COST: $ 100,000
TELECOMMUNICATIONS CAPABILITY: NONE
MAJOR LANGUAGES: FORTRAN COBOL
NUMBER OF COMPUTER USERS: 300 NUMBER OF PROFESSIONAL STAFF: 3
NON-COMPUTER EXPENDITURES: $ 10,000
CONTACT:(1)PROFESSOR K. MIYAGI DEAN
COMPUTING CENTER
THE UNIV OF THE RYUKYUS
SHURI, NAHA
OKINAWA, 903, JAPAN

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RECORD ID: 430 INSTITUTION: UNIVERSITY OF THE PHILIPPINES
COUNTRY: PHILIPPINES
INTEREST: MAILING LIST
NUMBER OF STUDENTS: 19,742 NUMBER OF FACULTY: 1920
DEGREES OFFERED IN COMPUTER SCIENCE: NONE
NON-DEGREE COURSES OFFERED: PROGRAMMING
STUDENTS IN COMPUTING: 39 MAJORS IN COMPUTING: 0
MAJOR COMPUTER: IBM 360-40 COST:
TELECOMMUNICATIONS CAPABILITY: NONE
MAJOR LANGUAGES: FORTRAN
NUMBER OF COMPUTER USERS: NUMBER OF PROFESSIONAL STAFF:
NON-COMPUTER EXPENDITURES:
CONTACT:(1)CRISTINA P. PAREL DEAN
STATISTICAL CENTER
UNIV OF THE PHILIPPINES
P.O. BOX 479
MANILA, PHILIPPINES

RECORD ID: 440 INSTITUTION: MAPUA INSTITUTE OF TECHNOLOGY
COUNTRY: PHILIPPINES
INTEREST: MAILING LIST
NUMBER OF STUDENTS: 8000 NUMBER OF FACULTY: 250
DEGREES OFFERED IN COMPUTER SCIENCE: NONE
NON-DEGREE COURSES OFFERED: PROGRAMMING
STUDENTS IN COMPUTING: 1650 MAJORS IN COMPUTING: 0
MAJOR COMPUTER: IBM 1620 COST: $ 46,000
TELECOMMUNICATIONS CAPABILITY: NONE
MAJOR LANGUAGES: FORTRAN OTHER
NUMBER OF COMPUTER USERS: 1650 NUMBER OF PROFESSIONAL STAFF: 2
NON-COMPUTER EXPENDITURES: $ 20,000
CONTACT:(1)JESUS C. GARCIA SUPERVISOR
IBM OFFICE
MAPUA INST OF TECHNOLOGY
P.O. BOX 918
MANILA, PHILIPPINES

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RECORD ID: 450 INSTITUTION: UNIVERSITY OF SINGAPORE
COUNTRY: SINGAPORE
INTEREST: MAILING LIST
NUMBER OF STUDENTS: 5000 NUMBER OF FACULTY: 400
DEGREES OFFERED IN COMPUTER SCIENCE: NONE
NON-DEGREE COURSES OFFERED: PROGRAMMING
STUDENTS IN COMPUTING: 200 MAJORS IN COMPUTING: 0
MAJOR COMPUTER: IBM 1130 COST: $ 190,000
TELECOMMUNICATIONS CAPABILITY: NONE
MAJOR LANGUAGES: FORTRAN COBOL
NUMBER OF COMPUTER USERS: 1000 NUMBER OF PROFESSIONAL STAFF: 2
NON-COMPUTER EXPENDITURES: $ 16,000
CONTACT:(1)ANG KIAN-BO PROFESSOR
UNIVERSITY OF SINGAPORE
COMPUTER CENTRE
PRINCE EDWARD RD. CAMPUS
SINGAPORE 1

RECORD ID: 460 INSTITUTION: NANYANG UNIVERSITY
COUNTRY: SINGAPORE
INTEREST: MAILING LIST AND USING NETWORK
NUMBER OF STUDENTS: 2000 NUMBER OF FACULTY: 150
DEGREES OFFERED IN COMPUTER SCIENCE: NONE
NON-DEGREE COURSES OFFERED: PROGRAMMING
STUDENTS IN COMPUTING: 400 MAJORS IN COMPUTING: 0
MAJOR COMPUTER: IBM 1130 COST: $ 90,000
TELECOMMUNICATIONS CAPABILITY: NONE
MAJOR LANGUAGES: FORTRAN COBOL
NUMBER OF COMPUTER USERS: 450 NUMBER OF PROFESSIONAL STAFF: 5
NON-COMPUTER EXPENDITURES: $ 3,000
CONTACT:(1)L.S. HSU DIRECTOR
COMPUTER CENTRE
NANYANG UNIVERSITY
SINGAPORE 22

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RECORD ID: 470 INSTITUTION: KING MONGKUT'S INSTITUTE OF TECHNOLOGY
COUNTRY: THAILAND
INTEREST: MAILING LIST
NUMBER OF STUDENTS: 650 NUMBER OF FACULTY: 30
DEGREES OFFERED IN COMPUTER SCIENCE: M.A., PH.D.
NON-DEGREE COURSES OFFERED: COMPUTER DESIGN
STUDENTS IN COMPUTING: 60 MAJORS IN COMPUTING:
MAJOR COMPUTER: NONE COST:
TELECOMMUNICATIONS CAPABILITY: NONE
MAJOR LANGUAGES: NONE
NUMBER OF COMPUTER USERS: 0 NUMBER OF PROFESSIONAL STAFF: 0
NON-COMPUTER EXPENDITURES:
CONTACT:(1)PICHAI ANCCHANDRAPENYA PROF AND VICE-RECTOR
KING MONGKUT'S TECH INST
NONDHABURI, THAILAND

RECORD ID: 480 INSTITUTION: CHULALONGKORN UNIVERSITY
COUNTRY: THAILAND
INTEREST: MAILING LIST, USING AND PLANNING USING NETWORK
NUMBER OF STUDENTS: 13,000 NUMBER OF FACULTY: 1700
DEGREES OFFERED IN COMPUTER SCIENCE: M.A.
NON-DEGREE COURSES OFFERED: PROGRAMMING
STUDENTS IN COMPUTING: 2000 MAJORS IN COMPUTING: 10
MAJOR COMPUTER: NEAC 2200 COST: $ 300,000
TELECOMMUNICATIONS CAPABILITY: NONE
MAJOR LANGUAGES: FORTRAN COBOL ASSEMBLER
NUMBER OF COMPUTER USERS: 10 NUMBER OF PROFESSIONAL STAFF: 20
NON-COMPUTER EXPENDITURES: $ 100,000
CONTACT:(1)DR. ITTIPON PADUNCHEWIT DIRECTOR
COMPUTER SCIENCE LAB
GRADUATE SCHOOL
CHULALONGKORN UNIVERSITY
BANGKOK, THAILAND

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RECORD ID: 490 INSTITUTION: ASIAN INSTITUTE OF TECHNOLOGY
COUNTRY: THAILAND
INTEREST: PARTICIPATE IN PLANNING NETWORK
NUMBER OF STUDENTS: 250 NUMBER OF FACULTY: 40
DEGREES OFFERED IN COMPUTER SCIENCE: NONE
NON-DEGREE COURSES OFFERED: PROGRAMMING
STUDENTS IN COMPUTING: 120 MAJORS IN COMPUTING:
MAJOR COMPUTER: IBM 1130 COST: $ 100,000
TELECOMMUNICATIONS CAPABILITY: NONE
MAJOR LANGUAGES: FORTRAN
NUMBER OF COMPUTER USERS: 80 NUMBER OF PROFESSIONAL STAFF: 2
NON-COMPUTER EXPENDITURES: $ 30,000
CONTACT:(1)TONGCHAT HONGLADAROMP CHAIRMAN
COMPUTER CENTER
ASIAN INST OF TECHNOLOGY
P.O. BOX 2754
BANGKOK, THAILAND

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